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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/812,752	03/20/2001	Maarten Koning	11283/30	8895

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EXAMINER	
THAI, XUAN MARIAN	
ART UNIT	**PAPER NUMBER**
2111	

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/812,752	Koning et al.	
	Examiner	Art Unit	
	XUAN M. THAI	2111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This is in response to communication filed on March 20, 2001. Claims 1-34 are presented for examination.

Drawings

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-34 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's Admitted Prior Art (specification pages 1-5).

As per claim 1, Applicant's Admitted Prior Art discloses a method comprising: testing (mutual exclusion control; page 4) a priority inheritance variable associated with a task (e.g. counter variable; page 4); and lowering a current priority of the task when testing the priority inheritance variable indicates that the task holds no resources that are involved in a priority inheritance (page 4, lines 28-30).

As per claim 2, Applicant's Admitted Prior Art discloses the method of claim 1 and further discloses the priority inheritance variable is configured to have a value indicative of the number of resources held by the task that higher priority tasks are waiting to receive (page 4, lines 23-33).

As per claim 3, Applicant's Admitted Prior Art discloses the method of claim 1 as pointed out above and further discloses raising the current priority of the task when a higher priority task blocks on a resource held by the task (see page 4, lines 17-20).

As per claim 4, Applicant's Admitted Prior Art discloses the method of claim 3, wherein, when raising the current priority of the task when the higher priority task blocks on the resource held by the task, the current priority of the task is raised to a current priority of the higher priority task that blocked on the resource held by the task. (pages 4-5).

As per claim 5, Applicant's Admitted Prior Art discloses the method of claim 1 and further discloses adjusting the priority inheritance variable when a higher priority task blocks on a resource held by the task. (see page 4, lines 25-26).

As per claim 6, Applicant's Admitted Prior Art discloses the method of claim 5, wherein, when adjusting the priority inheritance variable when the higher priority blocks on the resource held by the task, the priority inheritance variable is incremented (page 4, line 25).

As per claim 7, Applicant's Admitted Prior Art discloses the method of claim 5, and further discloses adjusting the priority inheritance variable when the higher priority task is deleted (see page 4, lines 26-28).

As per claim 8. Applicant's Admitted Prior Art discloses the method of claim 5, and further discloses adjusting the priority inheritance variable when the higher priority task times out (page 3, lines 32 et seq. to page 4).

As per claim 9, Applicant's Admitted Prior Art discloses the method of claim 1, and further discloses adjusting the priority inheritance variable when the task releases a resource (page 4, lines 26-28).

As per claim 10, Applicant's Admitted Prior Art discloses the method of claim 9, including wherein, when adjusting the priority inheritance variable when the task releases the resource, the priority inheritance variable is decremented (page 4, line 27).

As per claim 11, Applicant's Admitted Prior Art discloses the method of claim 1, wherein the priority inheritance variable is included in a task control block associated with the task (page 4, lines 23-25).

As per claim 12, Applicant's Admitted Prior Art discloses a method comprising: raising a current priority of a task to a current priority of a higher priority task when the higher priority task blocks on a resource held by the task (pages 3-4); incrementing a priority inheritance variable when the higher priority task blocks on the resource held by the task (page 4, lines 25-27), the priority inheritance variable associated with the task and configured to be indicative of the number of resources held by the task that higher priority tasks are waiting to receive (page 4, lines 25-33); decrementing the priority inheritance variable when the task

releases the resource that the higher priority task has blocked on (page 4, lines 26-28); testing the priority inheritance variable (page 4; mutual exclusion control); and lowering the current priority of the task when testing the priority inheritance variable indicates that the task holds no resources that are involved in a priority inheritance (page 4, lines 28-30).

As per claim 13, Applicant's Admitted Prior Art discloses a method comprising: testing a priority inheritance variable (e.g. counter variable) associated with a task (e.g. mutual exclusion control; page 4), the priority inheritance variable configured to have a value indicative of the number of inversion safe mutual exclusion semaphores held by the task that higher priority tasks are waiting to receive (page 4, lines 23-25); and setting a current priority of the task to a base priority value when testing the priority inheritance variable indicates that no higher priority tasks are waiting to receive inversion safe mutual exclusion semaphores held by the task (page 4, lines 28-30).

As per claim 14, Applicant's Admitted Prior Art discloses the method of claim 13, and further discloses raising the current priority of the task when a higher priority task blocks on an inversion safe mutual exclusion semaphore held by the task (page 4, lines 18-20).

As per claim 15, Applicant's Admitted Prior Art discloses the method of claim 14, wherein, when raising the current priority of the task when the higher priority task blocks on the inversion safe mutual exclusion semaphore held by the task, the current priority of the task is raised to a current priority of the higher priority task that blocked on the inversion safe mutual exclusion semaphore held by the task (pages 4-5).

As per claim 16, Applicant's Admitted Prior Art discloses the method of claim 13, further comprising adjusting the priority inheritance variable when a higher priority task blocks on an inversion safe mutual exclusion semaphore held by the task (page 4, lines 25-26).

As per claim 17, Applicant's Admitted Prior Art discloses the method of claim 16, wherein, when adjusting the priority inheritance variable when the higher priority blocks on the inversion safe mutual exclusion semaphore held by the task, the priority inheritance variable is incremented (page 4, lines 25-26).

As per claim 18, Applicant's Admitted Prior Art discloses the method of claim 13, further comprising: adjusting the priority inheritance variable when the task releases an inversion safe mutual exclusion semaphore (page 4, lines 26-28).

As per claim 19, Applicant's Admitted Prior Art discloses the method of claim 18, wherein, when adjusting the priority inheritance variable when the task releases the inversion safe mutual exclusion semaphore, the priority inheritance variable is decremented (page 4, line 27).

As per claim 20, Applicant's Admitted Prior Art discloses the method of claim 13, wherein the priority inheritance variable is included in a task control block for the task (page 4, lines 23-25).

As per claim 21, Applicant's Admitted Prior Art discloses the method comprising: raising a current priority of a task when a higher priority task blocks on an inversion safe mutual exclusion semaphore, the inversion safe mutual exclusion semaphore being held by the task (e.g. page 4, lines 18-20); incrementing a counter when the higher priority task blocks on the inversion safe mutual exclusion (page 4, lines 25-26), the counter associated with the task and

configured to have a value indicative of the number of inversion safe mutual exclusion semaphores held by the task that higher priority tasks are waiting to receive (page 4, lines 25-33); decrementing the counter when the task releases the inversion safe mutual exclusion semaphore (page 4, lines 26-28); and setting the current priority of the task to a base priority value when the counter is decremented to a value that indicates that the task holds no inversion safe mutual exclusion semaphores involved in priority inheritance (page 4, lines 28-30).

As per claim 22, Applicant's Admitted Prior Art discloses a system comprising: a task; a priority inheritance variable (e.g. counter variable; page 4, line 30), the priority inheritance variable associated with the task and configured to indicate the number of resources that are held by the task and that at least one higher priority task is blocked on (page 4, lines 18-33); and a mutual exclusion control mechanism (page 4, line 18) configured to set a current priority of the task to a base priority value when the priority inheritance variable indicates that no higher priority tasks are blocked on resources held by the task (page 4, lines 28-30).

As per claim 23, Applicant's Admitted Prior Art discloses the system according to claim 22, wherein the mutual exclusion control mechanism is configured to increase the current priority of the task when a higher priority task blocks on a resource held by the task.(page 4, lines 17-20)

As per claim 24, Applicant's Admitted Prior Art discloses a system comprising: a task; a priority inheritance variable (e.g. counter variable) associated with the task, the variable configured to indicate the number of inversion safe mutual exclusion semaphores that are held by the task and that at least one higher priority task is blocked on (pages 4-5); and a mutual exclusion control mechanism configured to set a current priority of the task to a base priority

value when the priority inheritance variable indicates that no higher priority tasks are blocked on inversion safe mutual exclusion semaphores held by the task. (page 4, lines 17-30).

As per claim 25, Applicant's Admitted Prior Art discloses the system according to claim 24,wherein the mutual exclusion control mechanism is configured to increase the current priority of the task when a higher priority task blocks on an inversion safe mutual exclusion semaphore held by the task (page 4, lines 25-26).

As per claim 26, Applicant's Admitted Prior Art discloses a system comprising: a semaphore (e.g. mutual exclusion control mechanism; pages 1 & 4); and a variable (e.g. variables) the variable associated with the semaphore and configured to indicate whether a pending request for the semaphore has resulted in a priority inheritance (page 4, lines 17 et seq. bridging page 5).

As per claim 27, Applicant's Admitted Prior Art discloses the system according to claim 26, further comprising: a semaphore control data structure (page 4), the semaphore control data structure associated with the semaphore and including the variable (page 4, lines 17-33).

As per claim 28, Applicant's Admitted Prior Art discloses the system according to claim 26, further comprising: a task; a priority inheritance variable (e.g. counter variable) associated with the task; and a mutual exclusion control mechanism (e.g. page 4, lines 17-20) configured to adjust the priority inheritance variable when the task releases the semaphore only if the variable indicates that a pending request for the semaphore has resulted in a priority inheritance (page 4, lines 17-33).

As per claim 29, Applicant's Admitted Prior Art discloses the system according to claim 26, further comprising: a task holding the semaphore, wherein the variable is configured to

indicate a count of the number of pending requests for the semaphore made by tasks with higher priority than the task holding the semaphore.

As per claim 30, Applicant's Admitted Prior Art discloses a method comprising: tracking a number of resources held by a task that higher priority tasks are presently blocked on (page 4, lines 25-26), the tracking using only a predetermined amount of memory (page 4, lines 31-32); raising a current priority of the task when a higher priority task blocks on a resource held by the task (page 4, lines 19-20); and setting the current priority of the task to a base priority value whenever no higher priority tasks are waiting to receive any of the resources held by the task and the task still holds at least one resource (page 4).

As per claims 31 and 34, Applicant's Admitted Prior Art discloses a method comprising: tracking a number of inversion safe mutual exclusion semaphores (e.g. page 1, lines 28-32) held by a task that higher priority tasks are presently blocked on, the tracking using only a require determined amount of memory (page 4, lines 17-33); raising a current priority of the task when a higher priority task blocks on an inversion safe mutual exclusion semaphore held by the task (page 4, lines 19-20); and setting the current priority of the task to a base priority value whenever no higher priority tasks are waiting to receive any of the inversion safe mutual exclusion semaphores held by the task and the task still holds at least one inversion safe mutual exclusion semaphore (page 4, lines 28-30).

As per claim 32, Applicant's Admitted Prior Art discloses an article of manufacture comprising a computer-readable medium having stored thereon instructions adapted to be executed by a processor (e.g. algorithms), the instructions which, when executed, define a series of steps to be used to control priority inheritance, said steps comprising: testing a priority

inheritance variable associated with a task (mutual exclusion control); and lowering a current priority of the task when testing the priority inheritance variable indicates that the task holds no resources that are involved in a priority inheritance (e.g. page 3, lines 32 et seq to page 4, lines 1-2 or 28-30).

As per claim 33, Applicant's Admitted Prior Art discloses an article of manufacture comprising a computer-readable medium having stored thereon instructions (e.g. algorithms) adapted to be executed by a processor, the instructions which, when executed, define a series of steps to be used to control priority inheritance, said steps comprising: raising a current priority of a task when a higher priority task blocks on an inversion safe mutual exclusion semaphore, the inversion safe mutual exclusion semaphore being held by the task (e.g. page 1, lines 30-32, page 3, lines 29-30 or page 4, lines 19-20); incrementing a counter when the higher priority task blocks on the inversion safe mutual exclusion, the counter associated with the task and configured to have a value indicative of the number of inversion safe mutual exclusion semaphores held by the task that higher priority tasks are waiting to receive (e.g. page 4, lines 25-26); decrementing the counter when the task releases the inversion safe mutual exclusion semaphore (e.g. page 4, lines 26-28); and setting the current priority of the task to a base priority value when the counter is decremented to a value that indicates that the task holds no inversion safe mutual exclusion semaphores involved in priority inheritance (page 4, lines 28-30).

5. Claims 1-4, 22, 24, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by McDonald et al. (USPN 6,560,627; hereinafter McDonald).

As per claims 1, 22, 24 and 26 McDonald discloses a method and system comprising: testing a priority inheritance variable associated with a task (eg. Step 710); and lowering a current priority of the task when testing the priority inheritance variable indicates that the task holds no resources that are involved in a priority inheritance (col. 5, lines 55-57).

As per claim 3, McDonald discloses the method of claim 1 as pointed out above and, further discloses raising the current priority of the task when a higher priority task blocks on a resource held by the task (see col. 5, lines 43-50).

As per claim 4, McDonald discloses the method of claim 3, wherein, when raising the current priority of the task when the higher priority task blocks on the resource held by the task, the current priority of the task is raised to a current priority of the higher priority task that blocked on the resource held by the task. (col. 5, lines 43-50).

6. Claims 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Murata (USPN 6,560,628).

As per claims 26 and 27, Murata discloses the claimed invention including a system comprising: a semaphore; and a variable ('inherit'; col. 8, lines 20-63; fig. 5), the variable ('inherit') associated with the semaphore and configured to indicate whether a pending request for the semaphore has resulted in a priority inheritance (col. 8, lines 20-63 and col. 12, lines 23-56); and a semaphore control data structure (col. 8, lines 20-63 and fig. 5), the semaphore control data structure associated with the semaphore and including the variable (col. 8, lines 20-63 and col. 12, lines 23-56).

As per claim 28, Murata discloses the mutual exclusion control mechanism being a means for adjusting the variable 'inherit' to (col. 8, lines 20-63) indicate that a pending request for the semaphore has resulted in priority inheritance.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references are cited in the Form PTO-892 for the applicant's review.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to XUAN M. THAI whose telephone number is 703-308-2064. The examiner can normally be reached on Monday to Friday from 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

XUAN M. THAI
Primary Examiner
Art Unit 2111

XMT
January 26, 2004